



Great Lakes Monitoring

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U.S. Environmental Protection Agency
Great Lakes National Program Office



Great Lakes Program

- Achievement of Great Lakes Water Quality Agreement goals
- Established as part of the Clean Water Act
- Resulting in formation of Great Lakes National Program Office (GLNPO)
- Coordinates efforts between Federal, state, tribal and Canadian governmental partners

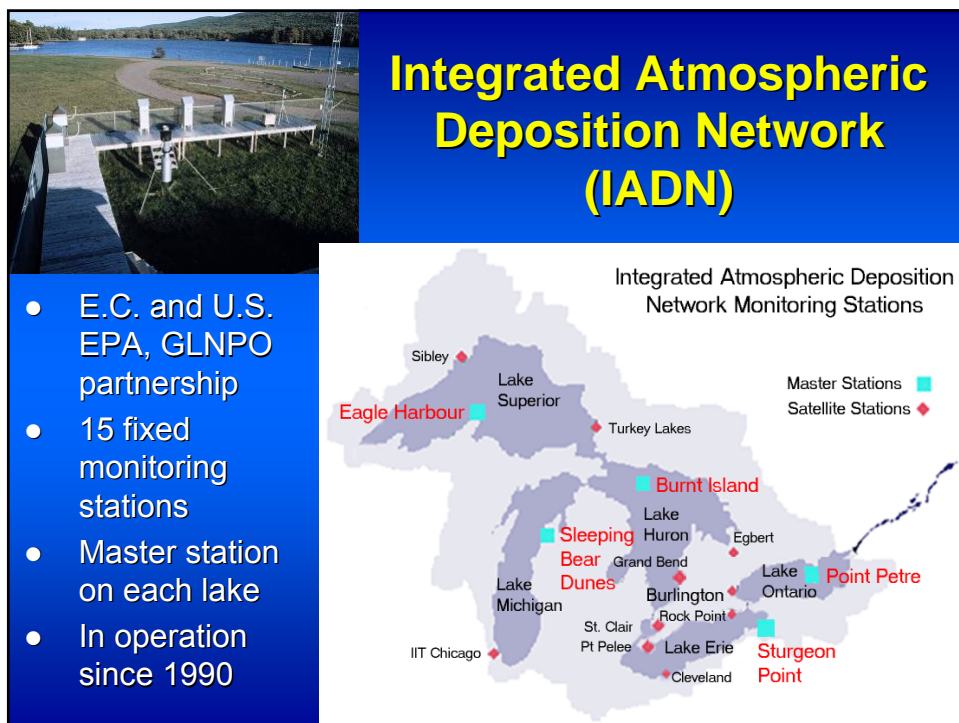
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GLNPO Mission

“ . . . restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem.”

Great Lakes Water Quality Agreement of 1978, Article II





Chemicals Currently Measured

PCBs	Endosulfan
Chlordanes	Heptachlor
α -HCH	Octachlorostyrene
γ -HCH (lindane)	PAHs
Aldrin	Trace metals (Canada)
Dieldrin	Mercury (CAMNet)
DDT, DDD, DDE	PBDEs (new)
HCB	
Trans-nonachlor	

* Parameter list can be expanded to address other chemical releases due to an incident

Great Lakes Fish Monitoring Program

Partnership with Federal and State Agencies

Measure contaminant levels in fish for:

Ecosystem Health

- Top predator fish (lake trout and walleye)
- Measure whole fish, including parts not eaten by humans.

Human Health

- Popular sport fish (coho and chinook salmon)
- Measure fillets.

Long-term Contaminant Trends

one of the most useful long-term data sets of organic contaminants on record for the Great Lakes.



Analytes

- PCBs
- Co-planar PCBs
- PeCB
- HCB
- OCS
- Hexachloro-cyclohexanes
- Toxaphene
- Mirex
- Endrin
- o,p-DDT, -DDE, -DDD
- p,p-DDT, -DDE, -DDD
- Heptachlor
- Chlordane
- Nonachlor
- Heptachlor epoxide
- Oxychlordane
- Aldrin
- Dieldrin

Added in 2000

- PBDEs
- PCNs
- PCDD/Fs
- Hg
- PBB-153

Reconnaissance

- PFOS
- PBBPA
- APEs
- Chlorothalonil
- SCCPs



GLFMP data use

- LaMPs
- Binational Toxics Strategy Report
- State of the Lakes Ecosystem Conference
- GPRA
- Great Lakes Strategy
- Great Lakes Indicators
- Peer Reviewed Journals



R/V Peter Wise Lake Guardian

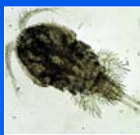


- Long-term monitoring as well as special studies
- Used by university researchers and federal and state partners
- Largest and best equipped research vessel on the Great Lakes



GLNPO Open Lake Monitoring

Biological components



Nutrients **Physical parameters**



R/V Mudpuppy



**Allows sampling of
contaminants in
sediments**



R/V Mudpuppy Specifications

- 32-foot flat-bottom boat specifically designed for sediment sampling in shallow rivers and harbors.
- Equipped with a vibro-coring unit that allows the sampling of cores up to 15 feet long from locations with water depth between 2 and 50 feet.
- Equipped with a differentially corrected global positioning system (GPS) with submeter accuracy that allows for precise and accurate determinations of sample locations.



Coastal Wetlands Consortium

- Purpose: To develop a long-term binational monitoring program for Great Lakes coastal wetlands
- Responsibilities:
 - Refine SOLEC coastal wetlands indicators
 - Collect all existing inventory data
 - Organize a monitoring and implementation team
 - Create an accessible coastal wetland database



Emphasis on the Nearshore Zone

- Recognized as necessary component of Great Lakes ecosystem
- International Joint Commission
- Great Lakes Regional Collaboration
- GLNPO nearshore monitoring program in development



Triaxus

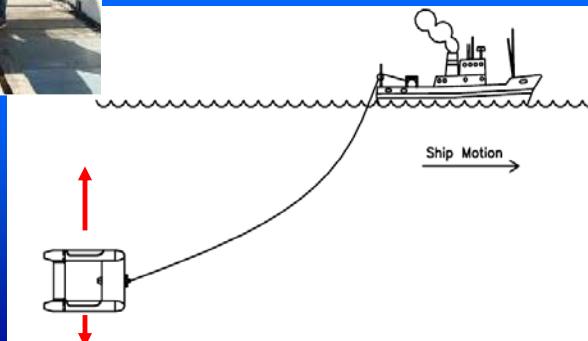
- Towed instrument platform that will enhance our offshore program and enable development of a nearshore program
- Triaxus will house several sensors:
 - SeaBird CTD & D.O. probe
 - Active Fluorometer
 - Laser Optical Plankton Counter (LOPC)
 - Nitrate Analyzer
 - Side-Scan Sonar
 - Fluoroprobe
- Will provide link between buoys and rest of the lake
- Large spatial coverage for satellite image “ground truth”



Triaxus (Continued)



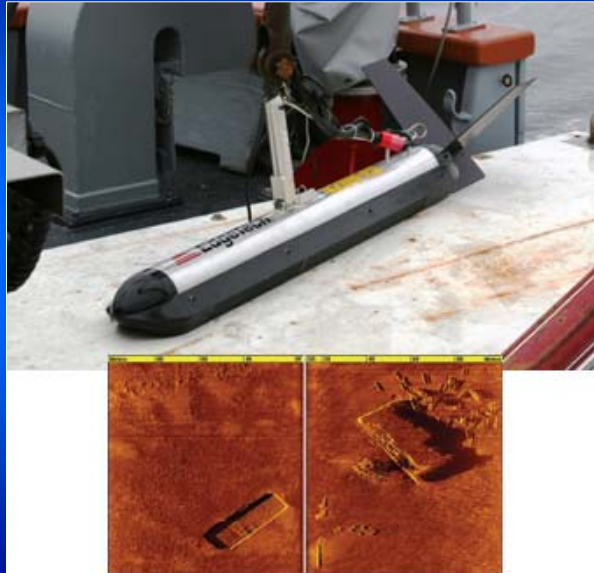
Will be towed behind the *R/V Peter Wise Lake Guardian* commencing in 2008.





Side-Scan Sonar

- Mapping the bottom of the lake
- Creation of habitat maps



Watershed-based work in LaMPs and Huron Initiative

- Bi-national monitoring survey/data base
- Grant funded work in key watersheds
- Workshops for intensive monitoring year
- Lake Michigan Monitoring Council
- Watershed fact sheets
- Digital watershed workshops
- Lake Michigan Watershed Academy
- Lake Michigan Pilot for National Design



Cooperative Monitoring

Formed in response to the Binational Executive Committee's request to Environment Canada and the U.S. EPA for a coordinated monitoring effort

- 2003 – Lake Ontario
- 2004 – Lake Erie
- 2005 – Lake Superior (Can), Lake Michigan (US – revisited the LMMB)
- 2006 – Lake Superior – Joint
- 2007 – Lake Huron
- **2008 – Lake Ontario** (Nearshore and revisiting LOLA)
- 2009 – Lake Erie
- 2010 – Lake Michigan
- 2011 – Lake Superior



Upcoming Focus: GLRRIN

GL Regional Research Information Network

Lake Michigan Food Webs Workshop

June 3-4, 2008, Chicago, IL

- Implementation phase of research coordination project related to priority issues
- Focus on impacts of invasive species on the Lake Michigan food web
- Identification of research questions, data gaps, and time and space considerations before the 2010 Lake Michigan field season
- <http://www.iisgcp.org/glrrinworkshop/>



Upcoming focus: SOLEC

2008 State of the Lakes Ecosystem Conference

October 22 – 23, Niagara Falls, Ontario

Day 1

- overview based on indicator reports and other information
- introduce nearshore topics and provide updates to information assembled in 1996
- opportunity for feedback during facilitated breakout sessions

Day 2

- focus on the nearshore zone of each major Great Lakes waterbody
- highlight specific nearshore issues for each lake and connecting channel
- breakout sessions will allow discussions by lake and by nearshore issue with focus on policy drivers and next-steps



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